

**REMARKS**

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Entry of this Response is respectfully requested. At the outset, applicants respectfully traverse the outstanding objection to claim 40 as being in improper dependent form, as recited in paragraph 7 of the outstanding Office Action, since the recited Markush group of claim 1 from which claim 40 depends can allegedly only include zinc. In point of fact, claim 1 specifically states, at lines 2-3 thereof, that the core comprises "a metal or metal-containing compound" (emphasis inserted). Thus, the recited Markush group of claim 1 relates to the metal, whereas the core comprises a metal or a metal-containing compound as recited in claim 1. Accordingly, the outstanding objection to claim 40 as being in improper dependent form is believed to be misplaced, and should be withdrawn. On this basis, withdrawal of this objection is respectfully requested.

Claims 1, 38, 40 and 41 stand rejected under 35 USC §102(b) as anticipated over the Bernstein '971 patent, as noted in paragraph 2 of the outstanding Office Action. This rejection is believed to be untenable since the '971 patent nowhere discloses or suggests the instant composite particles. Instead, the '971 patent discloses salts of pyrithione (e.g., in Example 16 thereof) in solution and as a white precipitate. Although column 10 of this patent does disclose a physical mixture of pyrithione salts with soil, there is no disclosure or suggestion that a composite particle is formed as instantly claimed wherein the core comprises a metal or metal-containing compound and the shell comprises the reaction product of a pyrithione with a portion of the core metal or metal compound. Further, there is no suggestion in the '971 patent regarding any composite biocidal particles, much less the instantly claimed ones.

As support for the Examiner's position that Bernstein '971 anticipates the instantly claimed invention, the penultimate line at page 3 of the outstanding Office Action alludes to Examples 16, 19 and 22, and the disclosures of columns 7 and 8 of the '971 patent. These sections of the '971 patent disclose heavy metal salts of pyrithione (columns 7 and 8) and the production of specific salts (i.e., the zinc salt of pyrithiones) in Examples 16, 19 and 22 of the '971 patent. However, in contradistinction to the instantly claimed composite particles containing a shell and a core comprising different moieties, the '971 patent's zinc pyrithione can be visualized as a single moiety, namely the reaction product of a zinc salt with a pyrithione to provide a zinc pyrithione as described in more detail in Examples 16, 19 and 22 of that patent. Nothing in the '971 patent discloses or suggests the instant composite particles, much less the enhanced biocidal efficacy associated therewith, as described in more

detail at pages 7 and 8 of the instant specification, against both "soft-fouling" and "hard-fouling" organisms. Indeed, a key shortcoming the zinc pyrithione compound itself, as described in the '971 patent, in terms of its not being as effective as might be desired against hard-fouling organisms, is described at page 3, lines 2-12 of the instant specification. The '971 patent does not address this issue, much less the use of composite biocide particles for any purpose. Therefore, the outstanding rejection under 35 U.S.C. 102(b) of the instant claims over the disclosures of the '971 patent is believed to be untenable and should be withdrawn.

The instant claims also stand rejected under 35 USC §102(e) as anticipated by Oppong '960 and the Bernstein '971 patent, as recited in paragraph 3 of the outstanding Office Action. The '960 patent discloses what are said to be synergistic combinations, e.g., physical mixtures, of of ionene polymers and pyrithione salts. There is no disclosure or suggestion in either the '960 patent or in the '971 patent of composite particles of any kind, even the ionene polymers with the pyrithione salts disclosed in the '960 patent, much less the instantly claimed composite particles wherein the core comprises a metal or metal-containing compound and the shell comprises the reaction product of a pyrithione with a portion of the core metal or metal compound. It is stated at page 5, lines 3-6, of the outstanding Office Action that "the pressing together of the ionene polymer [of the '960 patent] and the Bernstein ['971 patent] particles is well within the scope of 'composite particles' as presently claimed (e.g. a tablet is composed of composite particles of zinc pyrithione salts and ionene polymer)." Applicants believe that this quoted statement from the outstanding Office Action is clearly untenable. Macroscopic "pressing together" of those two components, namely the ionene polymer and the zinc pyrithione salts, will not form the instantly claimed composite particles having a shell and a core, wherein the core comprises a metal or metal-containing compound and the shell comprises the **reaction product** of a pyrithione with a portion of the core metal or metal compound. It is respectfully asserted that one of ordinary skill cannot follow the teachings of the '960 patent to "press together" the zinc pyrithione of the '971 patent with the ionene polymer of the '960 patent to fabricate the instantly claime core and requisite "reaction product" shell component.

Further, from applicants' perspective, the particularly identified and isolated teachings of the '971 patent regarding zinc pyrithione, and the teachings of the '960 patent regarding combination of ionene polymer and zinc pyrithione salts, taken together neither disclose nor establish a prima facie case of obviousness with respect to the instantly claimed composite particles composition. Moreover, it is respectfully submitted that the outstanding Office

Action does adequately explain what would lead one of ordinary skill in the art to modify the compositions of the '960 patent based upon the teachings of the '971 patent to arrive at the instantly claimed composite particles composition. It is well established that the prior art may be modified to reflect features of the instantly claimed invention does not make the modifications obvious – and here modification sufficient to produce the instantly claimed composite particles is neither disclosed nor suggested by the relied-upon prior art. Furthermore, applicants' invention cannot be used as an "instruction manual" or template to piece together the teachings of the prior art in order to render the claimed invention obviousness. See *In re Fritch*, 23 USPQ 1780 (Fed. Cir. 1992). Absent hindsight reasoning with full knowledge of the present invention, the teachings of the '960 patent and the '971 patent neither disclose nor suggest the present invention, alone or in combination.

The instant claims stand rejected under 35 USC §102(e) as anticipated over the Roenigk '271 patent, as noted in paragraph 4 of the outstanding Office Action. This rejection is untenable since the '271 patent neither discloses nor suggest any composite particle within the scope of the instant claims, but rather a compound which is zinc pyrithione chitosan. There is no disclosure or suggestion of a shell or a core in the '271 patent, much less specifics regarding the shell and core compositions for the composite particles as instantly claimed. Accordingly, this rejection is untenable and should be withdrawn.

The instant claims also stand rejected under 35 USC §102(b) over two Japanese patent abstracts, one to Nagata, and the other to Fujita, as noted in paragraphs 5 and 6 of the outstanding Office Action, respectively. Both of these Japanese patent abstracts describe physical mixtures, not composite particles, and therefore neither reference discloses, or is suggestive of, the instantly claimed invention. More specifically, the Nagata reference discloses fixing zinc oxide on a filter medium, and, if required, also fixing zinc pyrithione or zinc undecylenic acid on the filter medium. No composite particle is disclosed, and no teaching of any core or shell, much less any description of any core or shell, is provided in this reference. Likewise, Fujita discloses coating compositions containing zinc pyrithione alone or in combination with zinc oxide, but no composite particles, shell or core of any kind are disclosed or suggested in this reference.

It is stated at the middle of page 7 of the outstanding Office Action that "upon mixing the above reference components a 'composite' within the presently claimed scope would result". This statement is believed to be untenable. Even if the "physical mixture" form of composite particles were disclosed in the relied-upon prior art, which it is not, there would be no "inherent" disclosure of the instantly claimed composite particles since the chemical

attributes of the instant composite particles are different from that of a physical mixture by virtue of the fact that the instantly claimed shell component of the composite particles comprises the reaction product of pyrrithione with a portion of the core.

Lastly, the instant claims stand rejected under 35 USC 102(e) as allegedly anticipated by the Morris '947 patent. This rejection is believed to be untenable and should be withdrawn. The '947 patent discloses a photosensitizer being "surface coated" onto zinc oxide. Within the '947 patent's wish-list of photosensitizers is zinc pyrrithione. It is stated at the bottom of page 9 of the outstanding Office Action that the "Morris et al particle complex which possesses ingredients within the scope of the presently claimed would inherently possess the same physical parameters as presently claimed (e.g. core/shell structure)." Applicants respectfully disagree with this quoted statement from the outstanding Office Action. Since the Morris photosensitizer is "surface coated" onto the zinc oxide, that surface coating CANNOT provide a shell wherein the shell comprises the **reaction product** of a pyrrithione with a portion of the core metal or metal compound. Clearly, the "surface coating" envisioned by Morris not only does not disclose or suggest the instantly claimed shell, and the resulting composition is different since a "surface coating" lacks the structural integrity of a shell formed by chemically bonding with a portion of core material.. Thus, the "surface coating" disclosed in the '947 patent teaches away from the instantly claimed invention requiring that the shell comprise pyrrithione reacted with the core metal or metal compound. Therefore, this rejection of the claims is untenable and should be withdrawn.

Reconsideration of the claims in their amended form, and an early receipt of a Notice of Allowance thereof, are respectfully requested.

If the Examiner has any questions regarding this Response or believes that a discussion with Applicant's attorney would expedite prosecution, the Examiner is invited and encouraged to contact the undersigned at the telephone number below.

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Respectfully submitted

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